

Perception of Waiting Time at Transit Stops and Stations

A Transitway Impacts Research Program (TIRP) Research Brief



Photo: Metro Transit

“With several major initiatives currently under way to expand the number of shelters at bus stops and to improve the quality of transit schedule information across our entire network, the timing of this project could not be better. This study provides important insight that is directly applicable to the work that we are doing to ensure that our customers have the best possible experience using transit service in the Twin Cities.”
—Marilyn Porter, Director of Engineering and Facilities, Metro Transit

About the Research

Transit faces an inherent disadvantage that is not shared by other modes of transportation: waiting time. While walking times to and from transit vehicles are generally perceived as taking roughly as long as they really do, transit users tend to perceive waits for transit vehicles to arrive as significantly longer than they really are. This negative perception of transit waits presents a significant obstacle for encouraging a mode shift from automobile to transit.

To mitigate transit users’ aversion to waiting and transferring, high-amenity stations and improved shelters are becoming increasingly popular. However, beyond recent evidence that real-time departure information reduces perceived waiting time, little is known about what specific aspects of stations and stops help make transit wait times seem shorter to users. To address this lack of knowledge, researchers conducted a study comparing Twin Cities transit users’ estimates of their waiting time with their actual waiting time to determine how the design of amenities and environments surrounding transit stations and stops shapes users’ perceptions of waiting time.

Key Findings

- Waits at stops with no amenities are perceived as at least twice as long as they actually are.
- Benches, shelters, and real-time departure information signs significantly reduce perceived waiting times.
- The presence of a shelter—even a simple one—makes waits seem shorter, especially for waits less than 10 minutes; a 5-minute wait feels like only 3.2 minutes for riders with access to shelters.
- The complete package of a bench, shelter, and real-time departure information signs nearly erases the waiting time misperception for transit.
- Temperatures and weather conditions were not significant factors.
- Women waiting in surroundings perceived to be unsafe believe waits are dramatically longer than they really are, but the provision of transit stop amenities significantly reduces this gender disparity.

Project Design

Researchers compared transit riders’ actual and self-estimated waiting times at 36 light rail, commuter rail, and bus rapid transit stations, bus transit centers, and curbside bus stops in the Twin Cities region. Data collection teams consisting of one recruiter and one videographer surveyed more than 880 riders at various times of day during all seasons and weather conditions. The recruiter asked just-boarded passengers to estimate the time they had spent waiting at that stop; the videographer provided an objective measure of their actual waiting time. Then, the teams analyzed the data to determine how station and stop amenities—such as benches and shelters—affected perceived versus actual wait time while controlling for weather, time of day, sociodemographic characteristics, and trip characteristics.

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Conclusions & Policy Implications

- **Station and stop characteristics shape wait perceptions.** The presence of a bench dramatically reduces perceptions of all but the shortest of waits, even when it appears in the absence of other amenities; the addition of a shelter further strengthens this effect. Interestingly, there appears to be little difference between “basic” and “premium” shelters in reducing wait perceptions—providing simple, standardized shelters is a cost-effective way to harness this benefit.
- **Real-time travel information makes an impact.** The time perception impacts of real-time information are striking, especially when combined with a bench and shelter. However, even with no other amenities present, a real-time information sign reduces a transit user’s perception of waiting time almost as much as both a bench and a shelter. With the increasing prevalence and declining cost of this technology, the use of real-time information offers an attractive way to significantly improve the user experience, even at stops with space constraints.
- **When real-time information is not possible, consider other communication methods.** At present, broad deployment of real-time information signs may face cost limitations. However, other methods of communicating departure information may offer benefits as well. “Next-bus” apps, for example, may offer a low-cost alternative for users with access to a mobile device. The team’s survey was unable to produce reliable data on the use of next-bus apps due to respondents’ apparent conflation of online schedules and real-time information apps (based on common responses to a question about mobile device use). More detailed comparative study of alternative methods for communicating departure information may present a valuable direction for further research.
- **Providing safe waiting environments is critical for female transit users.** In some locations, the experience of waiting for a bus or train seemed

much longer for female transit users than for their male counterparts. At stations or stops that the research team perceived to be unsafe, female transit users’ perception of waiting time increased significantly. However, the provision of basic stop amenities greatly reduced this gender disparity. Focusing on basic security improvements—such as lighting, visible security cameras, and emergency phones—around less-safe transit stops appears to be an important gender equity measure, and may justify such amenities at lower ridership levels in less-safe areas. These improvements have the potential for significant returns in lower perceived waiting times and increases in the number of women adopting a transit-oriented lifestyle.

- **Social perceptions shape the experience of transit use.** Study results show that minority transit users have shorter perceptions of waiting time than white, non-Hispanic transit users, indicating the presence of important community-level differences in attitudes toward transit. Compared to the white, non-Hispanic population, minority groups have relatively high transit use rates and may be less likely to associate social stigma with transit use. Therefore, broadening social acceptance of transit use may reduce perceived waiting times for all users.
- **Negative wait time perceptions of transit can be overcome.** When a bench, shelter, and real-time information sign are combined, they produce nearly accurate estimates of waiting time—the time misperception nearly vanishes.

About the Research

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